

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended) A method for ~~aligning-recording~~ an image to be recorded by a direct image scanner on an upper layer of a multi-layered printed circuit board in alignment with an image recorded on a lower layer thereof, the method comprising:
visually imaging a portion of the image on the lower layer of said multi-layered printed circuit board, said upper layer and said lower layer being attached to each other when visually imaged, wherein said portion does not pass through said lower layer; and
recording a pattern on the upper layer, referenced to coordinates of the visual image of the portion.
2. (original) A method according to claim 1 wherein the portion is an alignment pattern recorded on the lower layer.
3. (original) A method according to claim 2 and including forming an opening in the upper layer through which the alignment pattern is visible.
4. (original) A method according to claim 2 wherein the alignment pattern is visible through the upper layer.
5. (original) A method according to claim 1 wherein recording includes:
providing an object aligned with the image portion; and
recording the pattern on the upper layer, referenced to the object.

6. (original) A method according to claim 5 wherein the object comprises holes formed in the upper layer.
7. (original) A method according to claim 5 and including:
imaging the object; and
determining a position of the object, wherein the pattern is recorded relative to the determined position.
8. (canceled)
9. (original) A method according to claim 6 wherein the holes are vias.
10. (original) A method according to claim 9 wherein the holes comprise functional vias connecting patterns on the upper and lower layers.
11. (original) A method according to claim 6 wherein the images comprise electrical circuits and wherein the holes are not related to an electrical function of the printed circuit board.
12. (canceled)
13. (original) A method according to claim 6 wherein the holes form an alignment pattern, referenced with the image on the lower layer.
14. (original) A method according to claim 13 wherein the images comprise electrical circuits and wherein the holes are not related to an electrical function of the images
15. (canceled) A method according to claim 14 wherein the holes pass through the upper and lower layers.

16. (currently amended) A method for ~~aligning-recording~~ an image to be recorded by a direct image scanner on an upper layer of a multi-layered printed circuit board substrate in alignment with a pattern on a lower layer thereof, the method comprising:

detecting at least ~~one hole~~ two holes provided in the upper layer, said at least ~~one hole~~ two holes being provided in predetermined alignment to said pattern and ~~said at least one hole~~ not passing through said lower layer, wherein said lower layer is attached to said upper layer; and

scanning a pattern on the upper layer in predetermined alignment with said at least ~~one hole~~ two holes.

17. (currently amended) A method for recording an image on an upper layer of a multi-layered printed circuit board substrate, the method comprising:

forming at least one hole in an upper layer of a multi-layered printed circuit board substrate said upper layer being attached to at least one lower layer of circuitry, said at least one hole not passing through a lower layer of circuitry and having a known spatial orientation to a pattern formed on one layer a lower layer of the substrate ~~and said substrate having at least two layers of circuitry already formed thereon~~;

acquiring an image of the at least one hole;

calculating a location of the at least one hole from analysis of the image; and

recording a pattern on the upper layer with reference to said location.

18. (currently amended) The method for recording an image according to claim 17 and wherein forming at least one hole comprises forming at least ~~one hole~~ two holes with a laser micro-machining device.

19. (canceled)

20. (original) The method for recording an image according to claim 17 and wherein acquiring an image includes acquiring a digital image of the at least one hole.

21. (original) The method for recording an image according to claim 17 and wherein calculating a location of the at least one hole from analysis of the image comprises calculating a location of the at least one hole in a coordinate system of an image recording system.

22. (original) The method for recording an image according to claim 17 and wherein recording a pattern comprises photosensitizing said upper layer and scanning a pattern onto the upper layer with a laser direct imaging system.

23. (original) The method for recording an image according to claim 17 and wherein recording a pattern comprises photosensitizing said upper layer and imaging a pattern onto the upper layer through a mask.

24. (currently amended) A method according to claim 17 wherein said at least one hole comprises a plurality of holes arranged in a non-periodic hole pattern.

25. (original) A method according to claim 24 wherein holes forming said hole pattern do not pass through at least a layer of said multi-layered printed circuit board substrate.

Claims 26. – 55 (canceled).